

Trigonometry 8th edition McKeague Test Bank

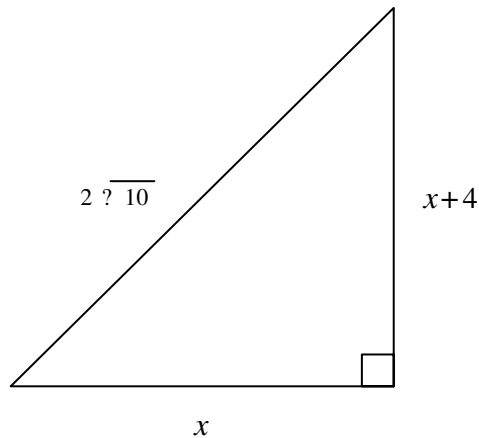
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McKeague/Turner Trigonometry 8e - Chapter 2 Form A

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- ____ 1. Find the complement and supplement of the angle 55° .
- | | |
|---|---|
| a. Complement: 45°
Supplement: 145° | d. Complement: 125°
Supplement: 305° |
| b. Complement: 125°
Supplement: 35° | e. Complement: 35°
Supplement: 125° |
| c. Complement: 145°
Supplement: 235° | |
- ____ 2. Let triangle ABC be a right triangle with $C = 90^\circ$. If $c = 19$ and $a = 6$, find b .
- | | |
|-----------------|-----------------------|
| a. $\sqrt{13}$ | d. $5\sqrt{13}$ |
| b. $\sqrt{397}$ | e. None of the above. |
| c. 13 | |
- ____ 3. Solve for x in the following right triangle:



- | | |
|------|------|
| a. 3 | d. 4 |
| b. 2 | e. 5 |
| c. 1 | |

McKeague/Turner Trigonometry 8e - Chapter 2 Form A

_____ 4. Find the lengths of the shortest two sides of a $30^\circ - 60^\circ - 90^\circ$ triangle, if the length of the longest side is 16.

a. $4, \frac{8}{\sqrt{3}}$

b. $4, 4\sqrt{3}$

c. $8, 8\sqrt{3}$

d. $4, \frac{4}{\sqrt{3}}$

e. $8, \frac{8}{\sqrt{3}}$

_____ 5. Find the length of the shorter sides of a $45^\circ - 45^\circ - 90^\circ$ triangle if the length of the hypotenuse is 21.

a. $\frac{21\sqrt{2}}{2}$

b. $\frac{21\sqrt{2}}{4}$

c. $\frac{21}{2}$

d. $\frac{21\sqrt{3}}{3}$

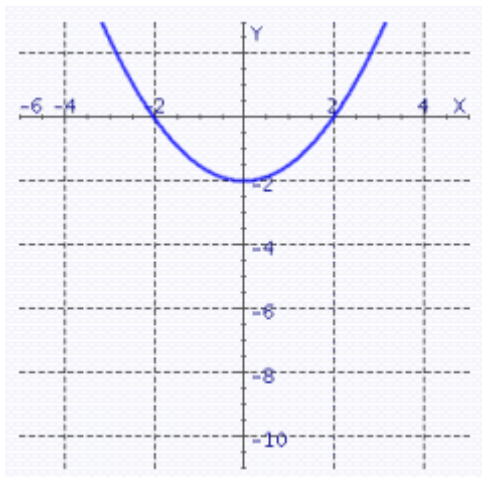
e. $\frac{21\sqrt{3}}{2}$

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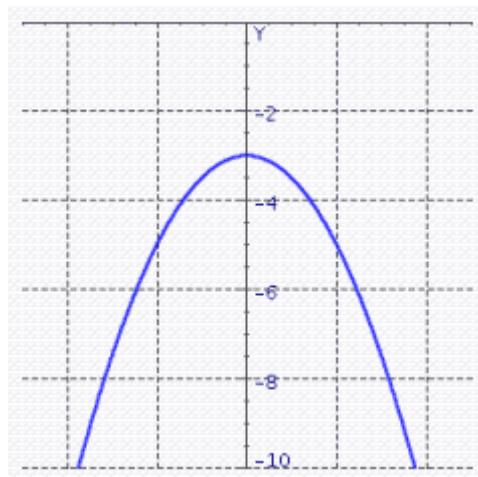
_____ 6. Graph the following parabola.

$$f(x) = -\frac{1}{2}x^2 - 2$$

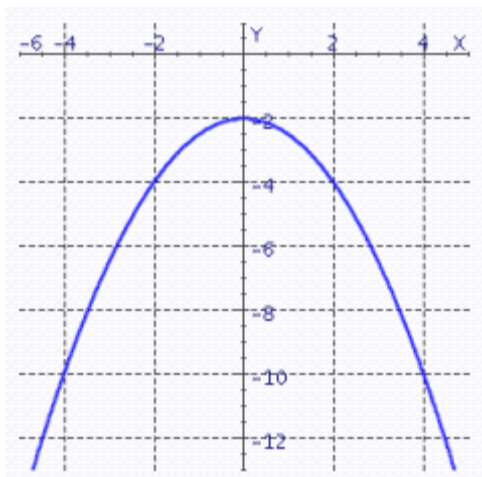
a.



d.

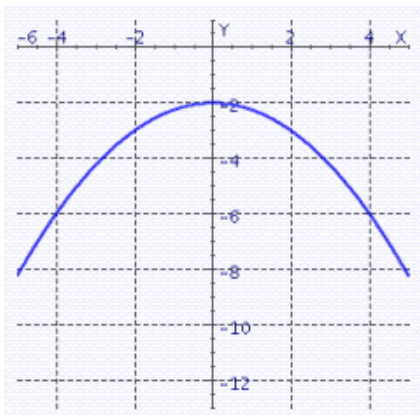


b.



e. None of the above.

c.



McKeague/Turner Trigonometry 8e - Chapter 2 Form A

- ____ 7. Find the distance between the two points $(-5, 8)$ and $(19, 53)$.
- 102
 - 51
 - 48
 - 153
 - 99
- ____ 8. Determine two coterminal angles (one positive and one negative) for $\theta = -503^\circ$.
- $127^\circ, -233^\circ$
 - $307^\circ, -413^\circ$
 - $127^\circ, -323^\circ$
 - $217^\circ, -143^\circ$
 - $217^\circ, -323^\circ$
- ____ 9. Determine which of the following points is located in quadrant 4.
- | | |
|--------------|---------------|
| a. $(-3, 7)$ | d. $(-7, -3)$ |
| b. $(3, -7)$ | e. $(7, 3)$ |
| c. $(-7, 3)$ | |
- ____ 10. Which of the following points lies on the unit circle?
- $\left(\frac{-7}{11}, \frac{4\sqrt{2}}{11}\right)$
 - $\left(\frac{5}{9}, \frac{-4\sqrt{2}}{9}\right)$
 - $\left(\frac{-7}{9}, \frac{-4\sqrt{2}}{9}\right)$
 - $\left(\frac{-5}{13}, \frac{-4\sqrt{2}}{13}\right)$
 - None of the above.

McKeague/Turner Trigonometry 8e - Chapter 2 Form A

____ 11. Given $\sin 30^\circ = \frac{1}{2}$ and $\cos 30^\circ = \frac{\sqrt{3}}{2}$, determine the following:

$\csc 30^\circ$

a. $\csc 30^\circ = \frac{\sqrt{3}}{3}$

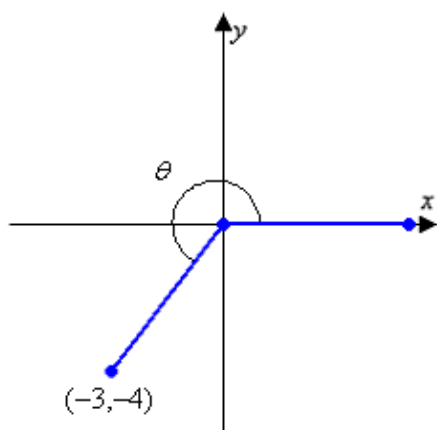
b. $\csc 30^\circ = \frac{\sqrt{2}}{2}$

c. $\csc 30^\circ = \sqrt{3}$

d. $\csc 30^\circ = 2$

e. undefined

____ 12. Given the figure below, determine the value of $\sin \theta$.



a. $\sin \theta = -\frac{3}{5}$

b. $\sin \theta = \frac{4}{3}$

c. $\sin \theta = -\frac{4}{5}$

d. $\sin \theta = -\frac{3}{4}$

e. $\sin \theta = \frac{3}{4}$

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- ____ 13. The point $(3, 4)$ is on the terminal side of an angle in standard position. Determine the exact value of $\cos \theta$.
- a. $\cos \theta = -\frac{5}{3}$
 - b. $\cos \theta = \frac{4}{3}$
 - c. $\cos \theta = \frac{3}{4}$
 - d. $\cos \theta = -\frac{4}{3}$
 - e. $\cos \theta = \frac{3}{5}$
- ____ 14. Indicate the two quadrants θ could terminate in if $\tan \theta = -\frac{13}{23}$.
- a. Quadrants II and III
 - b. Quadrants I and III
 - c. Quadrants I and IV
 - d. Quadrants II and IV
 - e. Quadrants III and IV
- ____ 15. Evaluate $\sin 300^\circ$.
- a. $\frac{-1}{2}$
 - b. $\frac{1}{2}$
 - c. $\frac{\sqrt{3}}{2}$
 - d. $\frac{-\sqrt{2}}{2}$
 - e. $\frac{-\sqrt{3}}{2}$
- ____ 16. Find $\sin \theta$ if $\csc \theta = \frac{-23}{19}$.
- a. $\frac{4}{23}$
 - b. $\frac{4}{19}$
 - c. $\frac{-4}{23}$
 - d. $\frac{19}{23}$
 - e. $\frac{-19}{23}$

McKeague/Turner Trigonometry 8e - Chapter 2 Form A

____ 17. Find $\tan \theta$ if $\sec \theta = \frac{\sqrt{170}}{7}$ and $\csc \theta = \frac{\sqrt{170}}{11}$.

a. $-\frac{7}{11}$

d. $\frac{77}{170}$

b. $\frac{170}{77}$

e. $\frac{11}{7}$

c. $\frac{7}{11}$

____ 18. If $\sin \theta = \frac{-6}{\sqrt{85}}$ and θ terminates in QIII, find $\cos \theta$.

a. $\frac{-6}{7}$

d. $\frac{-\sqrt{85}}{49}$

b. $\frac{-7}{\sqrt{85}}$

e. $\frac{6}{7}$

c. $\frac{7}{\sqrt{85}}$

McKeague/Turner Trigonometry 8e - Chapter 2 Form A

____ 19. Suppose $\csc \theta = 7$ and θ terminates in QII. Find the remaining trigonometric ratios of θ .

a. $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{4\sqrt{3}}{7}$$

$$\tan \theta = \frac{1}{4\sqrt{3}}$$

$$\sec \theta = \frac{7}{4\sqrt{3}}$$

$$\cot \theta = 4\sqrt{3}$$

b. $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

c. $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

d. $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

e. $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

McKeague/Turner Trigonometry 8e - Chapter 2 Form A

____ 20. If $\csc \theta = -11$, find $\csc^3 \theta$.

a. 1,331

d. $\frac{-1}{1,331}$

b. $\frac{-1}{33}$

e. -1,331

c. -33

____ 21. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\sin \alpha (\csc \alpha - \sin \alpha)$$

a. $1 - \sin^2 \alpha$

b. $\frac{\csc^2 \alpha - 1}{\csc^2 \alpha}$

c. $\frac{\csc^2 \alpha - \sec^2 \alpha + \tan^2 \alpha}{\csc^2 \alpha}$

d. $1 - \cot^2 \alpha$

e. $\cos^2 \alpha$

____ 22. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(\sin x + \cos x)(\sin x - \cos x)$$

a. $2 \sin^2 x - \sec^2 x - \tan^2 x$

b. $\sin^2 x - \cos^2 x$

c. $1 - 2 \cos^2 x$

d. $\csc^2 x - \cot^2 x - 2 \cos^2 x$

e. $1 - 2 \sin \left(\frac{\pi}{2} - x \right) \cos x$

____ 23. Which of the following is equivalent to the given expression?

$$\frac{\sin^2 x}{1 - \cos x}$$

a. $\tan x + \sin x$

b. $1 + \cos x$

c. $\csc x + \cot x$

d. $\tan x \cot x - \cos x$

e. $\cot x \sin x + \tan x$

McKeague/Turner Trigonometry 8e - Chapter 2 Form A

____ 24. Simplify the expression $\sqrt{x^2 + 13}$ as much as possible after substituting $\sqrt{13} \tan \theta$ for x .

a. $\sqrt{13} |\csc \theta|$

d. $13 |\csc \theta|$

b. $\sqrt{13} |\sin \theta|$

e. $13 |\sec \theta|$

c. $\sqrt{13} |\sec \theta|$

____ 25. Simplify the expression $\sqrt{30 - 6x^2}$ as much as possible after substituting $\sqrt{5} \sin \theta$ for x .

a. $30 |\csc \theta|$

d. $30 |\cos \theta|$

b. $\sqrt{30} |\csc \theta|$

e. $\sqrt{30} |\cos \theta|$

c. $\sqrt{30} |\tan \theta|$

McKeague/Turner Trigonometry 8e - Chapter 2 Form A

Answer Section

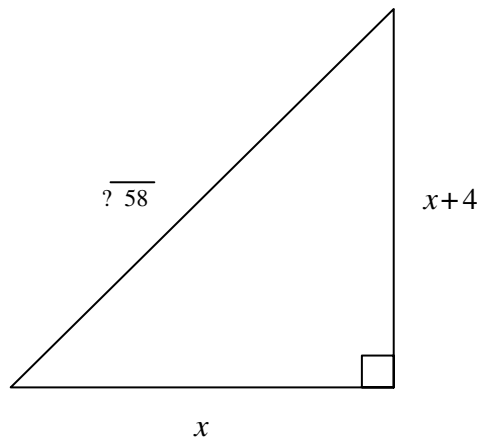
1. E
2. D
3. B
4. C
5. A
6. B
7. B
8. D
9. B
10. C
11. D
12. C
13. E
14. D
15. E
16. E
17. E
18. B
19. E
20. E
21. D
22. A
23. B
24. C
25. E

McKeague/Turner Trigonometry 8e - Chapter 2 Form B

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. Find the complement and supplement of the angle 59° .
- | | |
|--|---|
| a. Complement: 31°
Supplement: 121° | d. Complement: 149°
Supplement: 239° |
| b. Complement: 121°
Supplement: 31° | e. Complement: 121°
Supplement: 301° |
| c. Complement: 41°
Supplement: 141° | |
- _____ 2. Let triangle ABC be a right triangle with $C = 90^\circ$. If $c = 19$ and $a = 10$, find b .
- | | |
|-----------------|-----------------------|
| a. 9 | d. $\sqrt{461}$ |
| b. $\sqrt{9}$ | e. None of the above. |
| c. $3\sqrt{29}$ | |
- _____ 3. Solve for x in the following right triangle:



- | | |
|------|------|
| a. 6 | d. 5 |
| b. 4 | e. 3 |
| c. 2 | |

McKeague/Turner Trigonometry 8e - Chapter 2 Form B

_____ 4. Find the lengths of the shortest two sides of a $30^\circ - 60^\circ - 90^\circ$ triangle, if the length of the longest side is 24.

a. $6, 6\sqrt{3}$

d. $12, \frac{12}{\sqrt{3}}$

b. $6, \frac{6}{\sqrt{3}}$

e. $12, 12\sqrt{3}$

c. $6, \frac{12}{\sqrt{3}}$

_____ 5. Find the length of the shorter sides of a $45^\circ - 45^\circ - 90^\circ$ triangle if the length of the hypotenuse is 17.

a. $\frac{17\sqrt{2}}{4}$

d. $\frac{17\sqrt{3}}{3}$

b. $\frac{17\sqrt{2}}{2}$

e. $\frac{17}{2}$

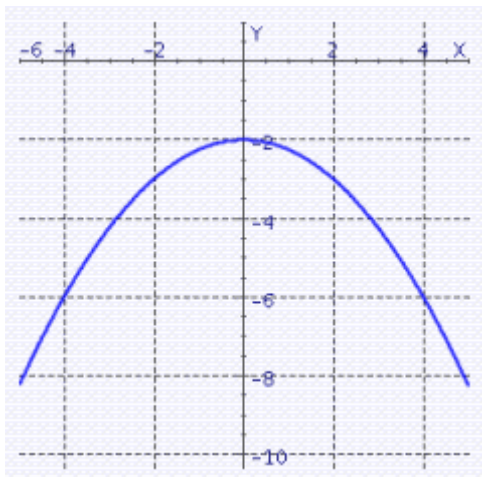
c. $\frac{17\sqrt{3}}{2}$

McKeague/Turner Trigonometry 8e - Chapter 2 Form B

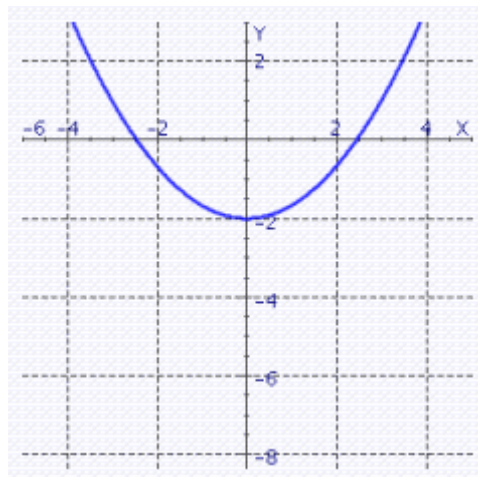
_____ 6. Graph the following parabola.

$$f(x) = -\frac{1}{3}x^2 - 2$$

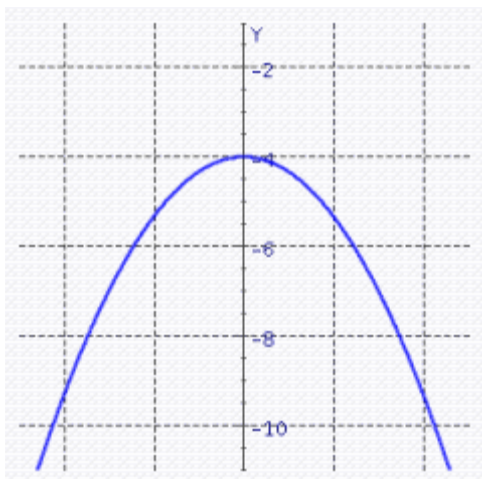
a.



d.

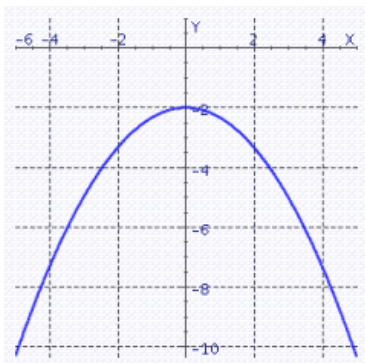


b.



e. None of the above.

c.



McKeague/Turner Trigonometry 8e - Chapter 2 Form B

- ____ 7. Find the distance between the two points $(-7, -5)$ and $(5, 11)$.
- 40
 - 20
 - 17
 - 60
 - 37
- ____ 8. Determine two coterminal angles (one positive and one negative) for $\theta = -506^\circ$.
- $124^\circ, -236^\circ$
 - $304^\circ, -416^\circ$
 - $124^\circ, -326^\circ$
 - $214^\circ, -146^\circ$
 - $214^\circ, -326^\circ$
- ____ 9. Determine which of the following points is located in quadrant 4.
- | | |
|---------------|--------------|
| a. $(-6, -4)$ | d. $(4, -6)$ |
| b. $(-4, 6)$ | e. $(-6, 4)$ |
| c. $(6, 4)$ | |
- ____ 10. Which of the following points lies on the unit circle?
- $\left(\frac{9}{13}, \frac{-2\sqrt{10}}{13}\right)$
 - $\left(\frac{-7}{11}, \frac{2\sqrt{10}}{11}\right)$
 - $\left(\frac{9}{11}, \frac{2\sqrt{10}}{11}\right)$
 - $\left(\frac{7}{15}, \frac{2\sqrt{10}}{15}\right)$
 - None of the above.

McKeague/Turner Trigonometry 8e - Chapter 2 Form B

____ 11. Given $\sin 30^\circ = \frac{1}{2}$ and $\cos 30^\circ = \frac{\sqrt{3}}{2}$, determine the following:

$\tan 30^\circ$

a. $\tan 30^\circ = \sqrt{3}$

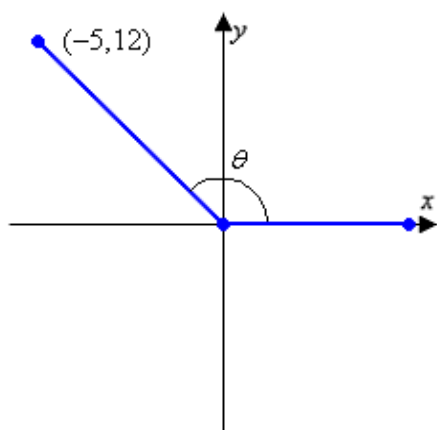
b. $\tan 30^\circ = 1$

c. $\tan 30^\circ = \frac{\sqrt{2}}{2}$

d. $\tan 30^\circ = \frac{\sqrt{3}}{3}$

e. undefined

____ 12. Given the figure below, determine the value of $\sin \theta$.



a. $\sin \theta = -\frac{5}{13}$

b. $\sin \theta = \frac{12}{5}$

c. $\sin \theta = \frac{12}{13}$

d. $\sin \theta = -\frac{5}{12}$

e. $\sin \theta = \frac{5}{12}$

McKeague/Turner Trigonometry 8e - Chapter 2 Form B

- ____ 13. The point $(5, 12)$ is on the terminal side of an angle in standard position. Determine the exact value of $\sec \theta$.
- a. $\sec \theta = -\frac{5}{13}$
 - b. $\sec \theta = \frac{5}{12}$
 - c. $\sec \theta = \frac{12}{5}$
 - d. $\sec \theta = -\frac{5}{12}$
 - e. $\sec \theta = \frac{13}{5}$
- ____ 14. Indicate the two quadrants θ could terminate in if $\tan \theta = -\frac{21}{31}$.
- a. Quadrants I and III
 - b. Quadrants II and III
 - c. Quadrants I and IV
 - d. Quadrants II and IV
 - e. Quadrants III and IV
- ____ 15. Evaluate $\sin 150^\circ$.
- a. $\frac{\sqrt{2}}{2}$
 - b. $\frac{\sqrt{3}}{2}$
 - c. $\frac{-\sqrt{3}}{2}$
 - d. $\frac{1}{2}$
 - e. $\frac{-1}{2}$
- ____ 16. Find $\sin \theta$ if $\csc \theta = \frac{-19}{17}$.
- a. $\frac{-17}{19}$
 - b. $\frac{-2}{19}$
 - c. $\frac{17}{19}$
 - d. $\frac{2}{19}$
 - e. $\frac{2}{17}$

McKeague/Turner Trigonometry 8e - Chapter 2 Form B

____ 17. Find $\tan \theta$ if $\sec \theta = \frac{\sqrt{218}}{7}$ and $\csc \theta = \frac{\sqrt{218}}{13}$.

a. $\frac{218}{91}$

d. $-\frac{7}{13}$

b. $\frac{13}{7}$

e. $\frac{91}{218}$

c. $\frac{7}{13}$

____ 18. If $\sin \theta = \frac{-6}{\sqrt{85}}$ and θ terminates in QIV, find $\cos \theta$.

a. $\frac{-6}{7}$

d. $\frac{6}{7}$

b. $\frac{-7}{\sqrt{85}}$

e. $\frac{\sqrt{85}}{49}$

c. $\frac{7}{\sqrt{85}}$

McKeague/Turner Trigonometry 8e - Chapter 2 Form B

____ 19. Suppose $\csc \theta = 15$ and θ terminates in QII. Find the remaining trigonometric ratios of θ .

a. $\sin \theta = \frac{-4\sqrt{14}}{15}$

$\cos \theta = \frac{1}{15}$

$\tan \theta = \frac{-1}{4\sqrt{14}}$

$\sec \theta = \frac{-15}{4\sqrt{14}}$

$\cot \theta = -4\sqrt{14}$

b. $\sin \theta = \frac{1}{15}$

$\cos \theta = \frac{4\sqrt{14}}{15}$

$\tan \theta = \frac{1}{4\sqrt{14}}$

$\sec \theta = \frac{15}{4\sqrt{14}}$

$\cot \theta = 4\sqrt{14}$

c. $\sin \theta = \frac{1}{15}$

$\cos \theta = \frac{-4\sqrt{14}}{15}$

$\tan \theta = -4\sqrt{14}$

$\sec \theta = \frac{-15}{4\sqrt{14}}$

$\cot \theta = \frac{-1}{4\sqrt{14}}$

d. $\sin \theta = \frac{-4\sqrt{14}}{15}$

$\cos \theta = \frac{1}{15}$

$\tan \theta = -4\sqrt{14}$

$\sec \theta = \frac{-15}{4\sqrt{14}}$

$\cot \theta = \frac{-1}{4\sqrt{14}}$

e. $\sin \theta = \frac{1}{15}$

$\cos \theta = \frac{-4\sqrt{14}}{15}$

$\tan \theta = \frac{-1}{4\sqrt{14}}$

$\sec \theta = \frac{-15}{4\sqrt{14}}$

$\cot \theta = -4\sqrt{14}$

____ 20. If $\csc \theta = -12$, find $\csc^3 \theta$.

a. $\frac{-1}{36}$

b. $\frac{-1}{1,728}$

c. $-1,728$

d. -36

e. $1,728$

McKeague/Turner Trigonometry 8e - Chapter 2 Form B

- ____ 21. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\sin \alpha (\csc \alpha - \sin \alpha)$$

- a. $1 - \sin^2 \alpha$
- b. $\frac{\csc^2 \alpha - 1}{\csc^2 \alpha}$
- c. $\frac{\csc^2 \alpha - \sec^2 \alpha + \tan^2 \alpha}{\csc^2 \alpha}$
- d. $1 - \cot^2 \alpha$
- e. $\cos^2 \alpha$

- ____ 22. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(\tan x + 1)^2$$

- a. $\tan^2 x + 1$
- b. $\sec^2 x + 2 \tan x$
- c. $\frac{1 + 2 \sin x \cos x}{\cos^2 x}$
- d. $\tan^2 x + 2 \tan x + 1$
- e. $\sec^2 x (1 + 2 \sin x \cos x)$

- ____ 23. Which of the following is equivalent to the given expression?

$$\frac{\sin^2 x}{1 - \cos x}$$

- a. $\tan x + \sin x$
- b. $1 + \cos x$
- c. $\csc x + \cot x$
- d. $\tan x \cot x - \cos x$
- e. $\cot x \sin x + \tan x$

- ____ 24. Simplify the expression $\sqrt{x^2 + 6}$ as much as possible after substituting $\sqrt{6} \tan \theta$ for x .

- a. $6|\sec \theta|$
- b. $\sqrt{6}|\sec \theta|$
- c. $\sqrt{6}|\sin \theta|$
- d. $6|\csc \theta|$
- e. $\sqrt{6}|\csc \theta|$

McKeague/Turner Trigonometry 8e - Chapter 2 Form B

____ 25. Simplify the expression $\sqrt{70 - 7x^2}$ as much as possible after substituting $\sqrt{10} \sin \theta$ for x .

a. $\sqrt{70} |\tan \theta|$

d. $\sqrt{70} |\csc \theta|$

b. $\sqrt{70} |\cos \theta|$

e. $70 |\csc \theta|$

c. $70 |\cos \theta|$

McKeague/Turner Trigonometry 8e - Chapter 2 Form B

Answer Section

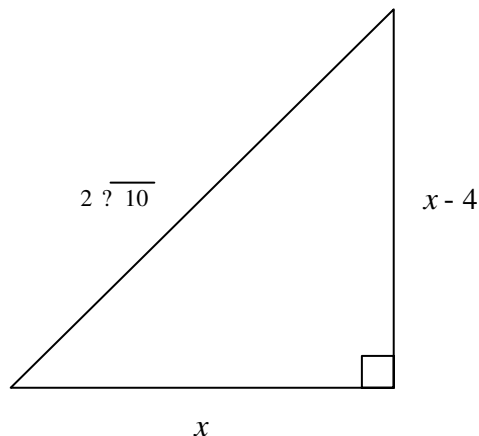
1. A
2. C
3. E
4. E
5. B
6. C
7. B
8. D
9. D
10. C
11. D
12. C
13. E
14. D
15. D
16. A
17. B
18. C
19. E
20. C
21. D
22. A
23. B
24. B
25. B

McKeague/Turner Trigonometry 8e - Chapter 2 Form C

Multiple Choice/Short Answer

Identify the choice that best completes the statement or answers the question/Use the space provided to write your answer.

- ____ 1. Find the complement and supplement of the angle 54° .
- a. Complement: 36°
Supplement: 126°
- b. Complement: 126°
Supplement: 36°
- c. Complement: 46°
Supplement: 146°
- d. Complement: 144°
Supplement: 234°
- e. Complement: 126°
Supplement: 306°
2. Determine two coterminal angles (one positive and one negative) for $\theta = -457^\circ$.
- ____ 3. Let triangle ABC be a right triangle with $C = 90^\circ$. If $c = 19$ and $a = 6$, find b .
- a. $\sqrt{13}$
- b. $\sqrt{397}$
- c. 13
- d. $5\sqrt{13}$
- e. None of the above.
- ____ 4. Solve for x in the following right triangle:



- a. 9
- b. 6
- c. 5
- d. 8
- e. 7

McKeague/Turner Trigonometry 8e - Chapter 2 Form C

_____ 5. Find the lengths of the shortest two sides of a $30^\circ - 60^\circ - 90^\circ$ triangle, if the length of the longest side is 16.

a. $4, \frac{8}{\sqrt{3}}$

d. $4, \frac{4}{\sqrt{3}}$

b. $4, 4\sqrt{3}$

e. $8, \frac{8}{\sqrt{3}}$

c. $8, 8\sqrt{3}$

_____ 6. Find the length of the shorter sides of a $45^\circ - 45^\circ - 90^\circ$ triangle if the length of the hypotenuse is 21.

a. $\frac{21\sqrt{2}}{2}$

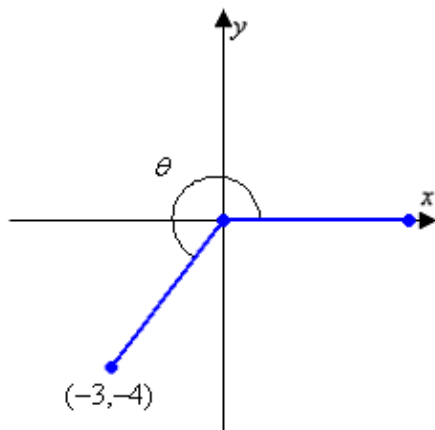
d. $\frac{21\sqrt{3}}{3}$

b. $\frac{21\sqrt{2}}{4}$

e. $\frac{21\sqrt{3}}{2}$

c. $\frac{21}{2}$

7. Given the figure below, determine the value of $\sin \theta$.

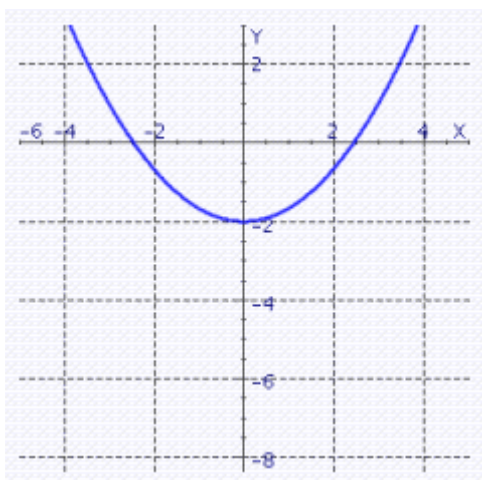


McKeague/Turner Trigonometry 8e - Chapter 2 Form C

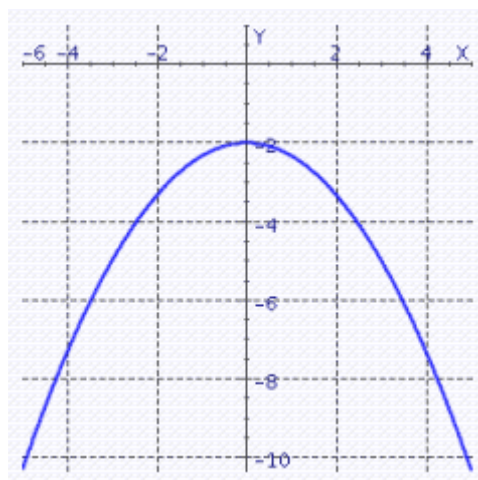
_____ 8. Graph the following parabola.

$$f(x) = -\frac{1}{3}x^2 - 2$$

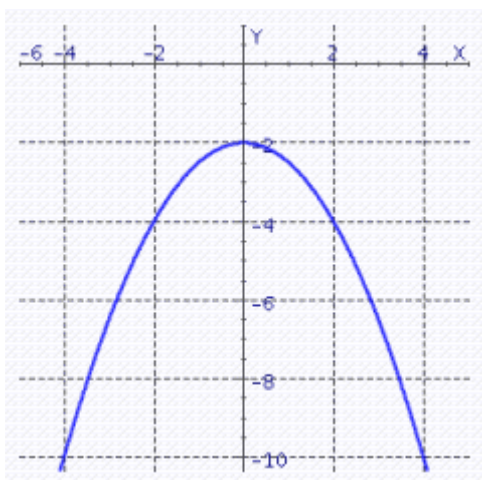
a.



d.

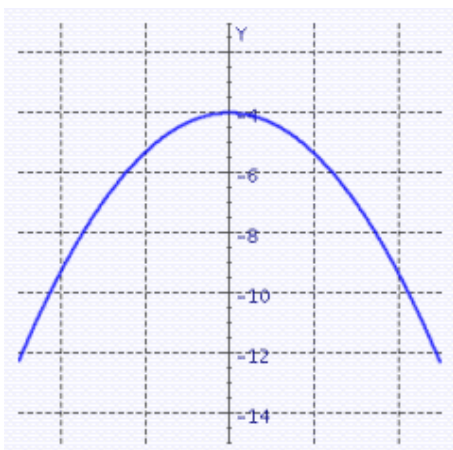


b.



e. None of the above.

c.



McKeague/Turner Trigonometry 8e - Chapter 2 Form C

_____ 9. Find the distance between the two points $(-5, 8)$ and $(19, 53)$.

- a. 102
- b. 51
- c. 48
- d. 153
- e. 99

_____ 10. Determine which of the following points is located in quadrant 4.

- a. $(-6, 3)$
- b. $(-3, 6)$
- c. $(3, 6)$
- d. $(-3, -6)$
- e. $(6, -3)$

_____ 11. Which of the following points lies on the unit circle?

- a. $\left(\frac{-5}{13}, \frac{-4\sqrt{2}}{13}\right)$
- b. $\left(\frac{-7}{11}, \frac{4\sqrt{2}}{11}\right)$
- c. $\left(\frac{5}{9}, \frac{-4\sqrt{2}}{9}\right)$
- d. $\left(\frac{-7}{9}, \frac{-4\sqrt{2}}{9}\right)$
- e. None of the above.

12. Given $\sin 30^\circ = \frac{1}{2}$ and $\cos 30^\circ = \frac{\sqrt{3}}{2}$, determine the following:

$\sec 30^\circ$

McKeague/Turner Trigonometry 8e - Chapter 2 Form C

_____ 13. Indicate the two quadrants θ could terminate in if $\tan \theta = -\frac{17}{25}$.

- a. Quadrants III and IV
- b. Quadrants I and III
- c. Quadrants I and IV
- d. Quadrants II and III
- e. Quadrants II and IV

_____ 14. Evaluate $\sin 300^\circ$.

- a. $\frac{1}{2}$
- b. $\frac{-\sqrt{2}}{2}$
- c. $\frac{-1}{2}$
- d. $\frac{-\sqrt{3}}{2}$
- e. $\frac{\sqrt{3}}{2}$

_____ 15. Find $\sin \theta$ if $\csc \theta = \frac{-19}{17}$.

- a. $\frac{-2}{19}$
- b. $\frac{-17}{19}$
- c. $\frac{17}{19}$
- d. $\frac{2}{17}$
- e. $\frac{2}{19}$

_____ 16. Find $\tan \theta$ if $\sec \theta = \frac{\sqrt{290}}{11}$ and $\csc \theta = \frac{\sqrt{290}}{13}$.

- a. $-\frac{11}{13}$
- b. $\frac{13}{11}$
- c. $\frac{290}{143}$
- d. $\frac{143}{290}$
- e. $\frac{11}{13}$

_____ 17. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(2 - 2\cos x)(2 + 2\cos x)$$

- a. $4 - \cos^2 x$
- b. $4 - 4\cos^2 x$
- c. $4\sin^2 x$
- d. $\frac{4}{\csc^2 x}$
- e. $\frac{4}{1 + \cot^2 x}$

McKeague/Turner Trigonometry 8e - Chapter 2 Form C

_____ 18. If $\sin \theta = \frac{-8}{\sqrt{89}}$ and θ terminates in QIV, find $\cos \theta$.

a. $\frac{5}{8}$

b. $\frac{-5}{8}$

c. $\frac{-5}{\sqrt{89}}$

d. $\frac{5}{\sqrt{89}}$

e. $\frac{\sqrt{89}}{25}$

19. The point $(7, 24)$ is on the terminal side of an angle in standard position. Determine the exact value of $\sin \theta$.

McKeague/Turner Trigonometry 8e - Chapter 2 Form C

____ 20. Suppose $\csc \theta = 7$ and θ terminates in QII. Find the remaining trigonometric ratios of θ .

a. $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{4\sqrt{3}}{7}$$

$$\tan \theta = \frac{1}{4\sqrt{3}}$$

$$\sec \theta = \frac{7}{4\sqrt{3}}$$

$$\cot \theta = 4\sqrt{3}$$

b. $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

c. $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

d. $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

e. $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

____ 21. If $\csc \theta = -14$, find $\csc^3 \theta$.

a. $\frac{-1}{42}$

b. $\frac{-1}{2,744}$

c. 2,744

d. -2,744

e. -42

McKeague/Turner Trigonometry 8e - Chapter 2 Form C

- ____ 22. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\sec \phi \left(\frac{\sin \phi}{\tan \phi} \right)$$

- a. $\sec^2 \phi - \tan^2 \phi$
- b. $\sin^2 \phi + \cos^2 \phi$
- c. $\csc^2 \phi - \cot^2 \phi$
- d. $\cos^2 \phi - \sin^2 \phi$
- e. 1

- ____ 23. Simplify the expression $\sqrt{x^2 + 11}$ as much as possible after substituting $\sqrt{11} \tan \theta$ for x .

- a. $\sqrt{11} |\sec \theta|$
- b. $11 |\sec \theta|$
- c. $\sqrt{11} |\csc \theta|$
- d. $\sqrt{11} |\sin \theta|$
- e. $11 |\csc \theta|$

- ____ 24. Simplify the expression $\sqrt{30 - 10x^2}$ as much as possible after substituting $\sqrt{3} \sin \theta$ for x .

- a. $30 |\cos \theta|$
- b. $\sqrt{30} |\cos \theta|$
- c. $\sqrt{30} |\csc \theta|$
- d. $\sqrt{30} |\tan \theta|$
- e. $30 |\csc \theta|$

25. Which of the following is equivalent to the given expression?

$$\frac{\cot^2 x}{\csc x + 1}$$

McKeague/Turner Trigonometry 8e - Chapter 2 Form C

Answer Section

1. A
2. $263^\circ, -97^\circ$
3. D
4. B
5. C
6. A
7. $\sin \theta = -\frac{4}{5}$
8. D
9. B
10. E
11. D
12. $\sec 30^\circ = \frac{2\sqrt{3}}{3}$
13. E
14. D
15. B
16. B
17. A
18. D
19. $\sin \theta = \frac{24}{25}$
20. B
21. D
22. D
23. A
24. B
25. $\csc x - 1$

McKeague/Turner Trigonometry 8e - Chapter 2 Form D

Multiple Choice/Short Answer

Identify the choice that best completes the statement or answers the question/Use the space provided to write your answer.

1. Determine two coterminal angles (one positive and one negative) for $\theta = -477^\circ$.

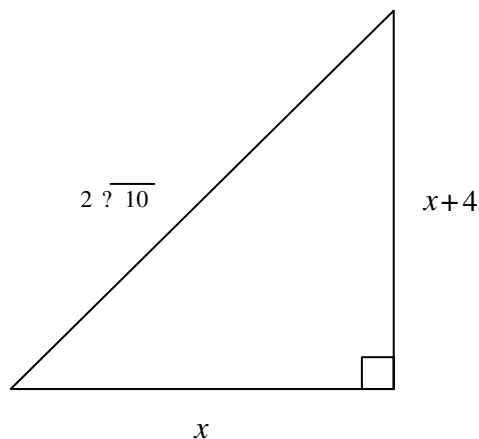
____ 2. Find the complement and supplement of the angle 59° .

- | | |
|---|--|
| a. Complement: 121°
Supplement: 301° | d. Complement: 121°
Supplement: 31° |
| b. Complement: 41°
Supplement: 141° | e. Complement: 31°
Supplement: 121° |
| c. Complement: 149°
Supplement: 239° | |

____ 3. Let triangle ABC be a right triangle with $C = 90^\circ$. If $c = 19$ and $a = 2$, find b .

- | | |
|-----------------|-----------------------|
| a. 17 | d. $\sqrt{17}$ |
| b. $\sqrt{365}$ | e. None of the above. |
| c. $\sqrt{357}$ | |

____ 4. Solve for x in the following right triangle:



- | | |
|------|------|
| a. 1 | d. 3 |
| b. 5 | e. 2 |
| c. 4 | |

McKeague/Turner Trigonometry 8e - Chapter 2 Form D

_____ 5. Find the lengths of the shortest two sides of a $30^\circ - 60^\circ - 90^\circ$ triangle, if the length of the longest side is 16.

a. $4, \frac{4}{\sqrt{3}}$

b. $4, 4\sqrt{3}$

c. $8, 8\sqrt{3}$

d. $4, \frac{8}{\sqrt{3}}$

e. $8, \frac{8}{\sqrt{3}}$

6. The point $(8, 15)$ is on the terminal side of an angle in standard position. Determine the exact value of $\cot \theta$.

_____ 7. Find the length of the shorter sides of a $45^\circ - 45^\circ - 90^\circ$ triangle if the length of the hypotenuse is 17.

a. $\frac{17\sqrt{3}}{3}$

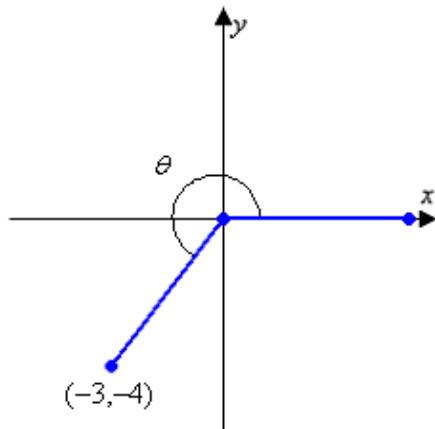
b. $\frac{17\sqrt{3}}{2}$

c. $\frac{17}{2}$

d. $\frac{17\sqrt{2}}{4}$

e. $\frac{17\sqrt{2}}{2}$

8. Given the figure below, determine the value of $\sin \theta$.

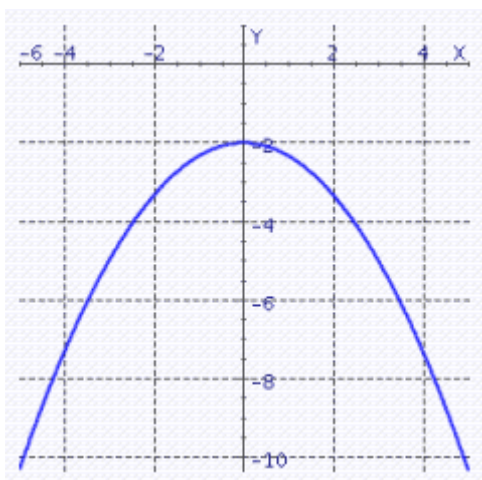


McKeague/Turner Trigonometry 8e - Chapter 2 Form D

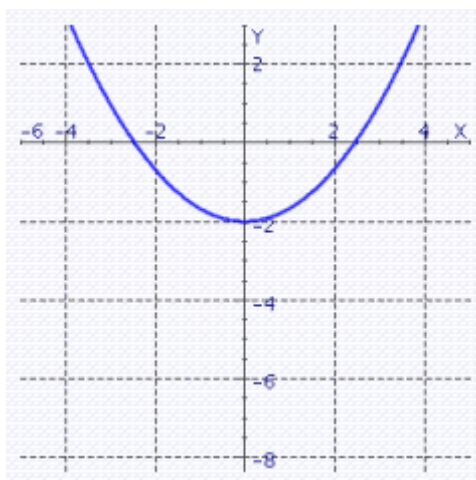
____ 9. Graph the following parabola.

$$f(x) = -\frac{1}{3}x^2 - 2$$

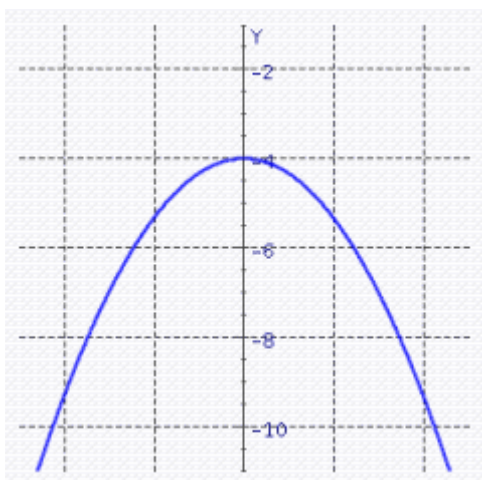
a.



d.

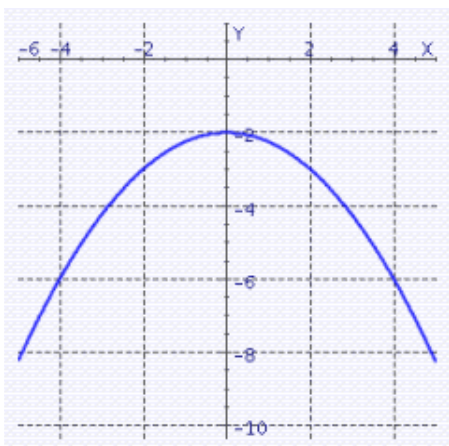


b.



e. None of the above.

c.



McKeague/Turner Trigonometry 8e - Chapter 2 Form D

____ 10. Determine which of the following points is located in quadrant 4.

- a. $(6, 4)$
- b. $(-6, -4)$
- c. $(4, -6)$
- d. $(-6, 4)$
- e. $(-4, 6)$

____ 11. Find $\tan \theta$ if $\sec \theta = \frac{\sqrt{530}}{13}$ and $\csc \theta = \frac{\sqrt{530}}{19}$.

- a. $\frac{530}{247}$
- b. $\frac{13}{19}$
- c. $\frac{19}{13}$
- d. $-\frac{13}{19}$
- e. $\frac{247}{530}$

____ 12. Which of the following points lies on the unit circle?

- a. $\left(\frac{-7}{11}, \frac{2\sqrt{10}}{11} \right)$
- b. $\left(\frac{7}{15}, \frac{2\sqrt{10}}{15} \right)$
- c. $\left(\frac{9}{11}, \frac{2\sqrt{10}}{11} \right)$
- d. $\left(\frac{9}{13}, \frac{-2\sqrt{10}}{13} \right)$
- e. None of the above.

13. Given $\sin 30^\circ = \frac{1}{2}$ and $\cos 30^\circ = \frac{\sqrt{3}}{2}$, determine the following:
 $\csc 30^\circ$

McKeague/Turner Trigonometry 8e - Chapter 2 Form D

____ 14. Which of the following is equivalent to the given expression?

$$\frac{\cos^2 x}{1 + \sin x}$$

- a. $\tan x + \cos x$
- b. $1 - \sin x$
- c. $\csc x + \cot x$
- d. $\tan x \cot x - \sin x$
- e. $\cot x \cos x + \tan x$

____ 15. Evaluate $\sin 240^\circ$.

a. $\frac{-\sqrt{2}}{2}$

b. $\frac{1}{2}$

c. $\frac{-1}{2}$

d. $\frac{-\sqrt{3}}{2}$

e. $\frac{\sqrt{3}}{2}$

____ 16. Indicate the two quadrants θ could terminate in if $\tan \theta = -\frac{21}{31}$.

- a. Quadrants I and III
- b. Quadrants II and IV
- c. Quadrants I and IV

- d. Quadrants II and III
- e. Quadrants III and IV

____ 17. Find $\sin \theta$ if $\csc \theta = \frac{-17}{13}$.

a. $\frac{13}{17}$

b. $\frac{-4}{17}$

c. $\frac{-13}{17}$

d. $\frac{4}{13}$

e. $\frac{4}{17}$

____ 18. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(\tan x + 1)^2$$

a. $\tan^2 x + 1$

b. $\sec^2 x + 2 \tan x$

c. $\frac{1 + 2 \sin x \cos x}{\cos^2 x}$

d. $\tan^2 x + 2 \tan x + 1$

e. $\sec^2 x(1 + 2 \sin x \cos x)$

McKeague/Turner Trigonometry 8e - Chapter 2 Form D

____ 19. If $\sin \theta = \frac{-6}{\sqrt{85}}$ and θ terminates in QIV, find $\cos \theta$.

a. $\frac{7}{\sqrt{85}}$

d. $\frac{-7}{\sqrt{85}}$

b. $\frac{6}{7}$

e. $\frac{-6}{7}$

c. $\frac{\sqrt{85}}{49}$

____ 20. Find the distance between the two points $(-7, -4)$ and $(41, 16)$.

a. 104

b. 52

c. 49

d. 156

e. 101

McKeague/Turner Trigonometry 8e - Chapter 2 Form D

____ 21. Suppose $\csc \theta = 9$ and θ terminates in QII. Find the remaining trigonometric ratios of θ .

a. $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{4\sqrt{5}}{9}$$

$$\tan \theta = \frac{1}{4\sqrt{5}}$$

$$\sec \theta = \frac{9}{4\sqrt{5}}$$

$$\cot \theta = 4\sqrt{5}$$

b. $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{-4\sqrt{5}}{9}$$

$$\tan \theta = \frac{-1}{4\sqrt{5}}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = -4\sqrt{5}$$

c. $\sin \theta = \frac{-4\sqrt{5}}{9}$

$$\cos \theta = \frac{1}{9}$$

$$\tan \theta = -4\sqrt{5}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = \frac{-1}{4\sqrt{5}}$$

d. $\sin \theta = \frac{-4\sqrt{5}}{9}$

$$\cos \theta = \frac{1}{9}$$

$$\tan \theta = \frac{-1}{4\sqrt{5}}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = -4\sqrt{5}$$

e. $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{-4\sqrt{5}}{9}$$

$$\tan \theta = -4\sqrt{5}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = \frac{-1}{4\sqrt{5}}$$

McKeague/Turner Trigonometry 8e - Chapter 2 Form D

____ 22. If $\csc \theta = -12$, find $\csc^3 \theta$.

- a. 1,728
- b. -36
- c. $-\frac{1}{1,728}$
- d. -1,728
- e. $-\frac{1}{36}$

____ 23. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\sin \alpha (\csc \alpha - \sin \alpha)$$

- a. $1 - \sin^2 \alpha$
- b. $\frac{\csc^2 \alpha - 1}{\csc^2 \alpha}$
- c. $\frac{\csc^2 \alpha - \sec^2 \alpha + \tan^2 \alpha}{\csc^2 \alpha}$
- d. $1 - \cot^2 \alpha$
- e. $\cos^2 \alpha$

____ 24. Simplify the expression $\sqrt{x^2 + 10}$ as much as possible after substituting $\sqrt{10} \tan \theta$ for x .

- a. $\sqrt{10} |\csc \theta|$
- b. $\sqrt{10} |\sec \theta|$
- c. $10 |\sec \theta|$
- d. $10 |\csc \theta|$
- e. $\sqrt{10} |\sin \theta|$

____ 25. Simplify the expression $\sqrt{66 - 11x^2}$ as much as possible after substituting $\sqrt{6} \sin \theta$ for x .

- a. $66 |\csc \theta|$
- b. $66 |\cos \theta|$
- c. $\sqrt{66} |\tan \theta|$
- d. $\sqrt{66} |\csc \theta|$
- e. $\sqrt{66} |\cos \theta|$

McKeague/Turner Trigonometry 8e - Chapter 2 Form D

Answer Section

1. $243^\circ, -117^\circ$
2. E
3. C
4. E
5. C
6. $\cot \theta = \frac{8}{15}$
7. E
8. $\sin \theta = -\frac{4}{5}$
9. A
10. C
11. C
12. C
13. $\csc 30^\circ = 2$
14. B
15. D
16. B
17. C
18. A
19. A
20. B
21. B
22. D
23. D
24. B
25. E

McKeague/Turner Trigonometry 8e - Chapter 2 Form E

Multiple Choice/Short Answer

Identify the choice that best completes the statement or answers the question/Use the space provided to write your answer.

- _____ 1. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\csc \rho \tan \rho + \sec \rho$$

a. $\frac{2 \tan \rho}{\sin \rho}$

b. $\frac{\csc \rho \sin \rho + \sec \rho \cos \rho}{\cos \rho}$

c. $\frac{\tan \rho \cos \rho + \sin \rho}{\sin \rho \cos \rho}$

d. $2 \sin \rho$

e. $\frac{2}{\cos \rho}$

- _____ 2. Find the complement and supplement of the angle 59° .

a. Complement: 121°
Supplement: 31°

b. Complement: 31°
Supplement: 121°

c. Complement: 121°
Supplement: 301°

d. Complement: 41°
Supplement: 141°

e. Complement: 149°
Supplement: 239°

- _____ 3. Determine which of the following points is located in quadrant 4.

a. $(-3, -6)$

b. $(-6, 3)$

c. $(3, 6)$

d. $(-3, 6)$

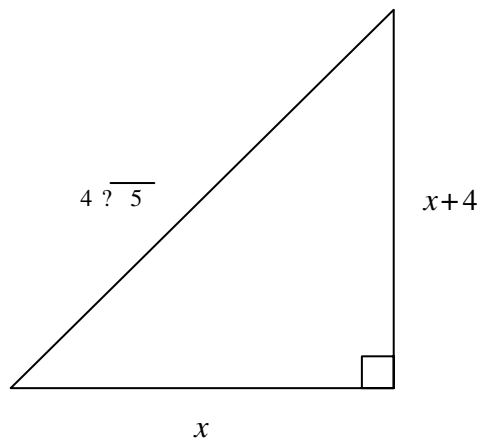
e. $(6, -3)$

McKeague/Turner Trigonometry 8e - Chapter 2 Form E

- _____ 4. Which of the following points lies on the unit circle?
- a. $\left(\frac{-7}{11}, \frac{-4\sqrt{2}}{11} \right)$
 - b. $\left(\frac{-7}{9}, \frac{4\sqrt{2}}{9} \right)$
 - c. $\left(\frac{5}{9}, \frac{4\sqrt{2}}{9} \right)$
 - d. $\left(\frac{-5}{13}, \frac{4\sqrt{2}}{13} \right)$
 - e. None of the above.
- _____ 5. Let triangle ABC be a right triangle with $C = 90^\circ$. If $c = 19$ and $a = 2$, find b .
- a. $\sqrt{357}$
 - b. $\sqrt{365}$
 - c. $\sqrt{17}$
 - d. 17
 - e. None of the above.
6. Determine two coterminal angles (one positive and one negative) for $\theta = -453^\circ$.

McKeague/Turner Trigonometry 8e - Chapter 2 Form E

____ 7. Solve for x in the following right triangle:

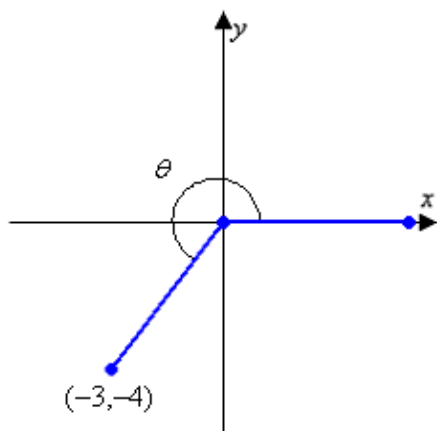


- | | |
|------|------|
| a. 6 | d. 3 |
| b. 7 | e. 4 |
| c. 5 | |

____ 8. Find the lengths of the shortest two sides of a $30^\circ - 60^\circ - 90^\circ$ triangle, if the length of the longest side is 20.

- | | |
|------------------------------|----------------------------|
| a. 10, $10\sqrt{3}$ | d. 5, $5\sqrt{3}$ |
| b. 10, $\frac{10}{\sqrt{3}}$ | e. 5, $\frac{5}{\sqrt{3}}$ |
| c. 5, $\frac{10}{\sqrt{3}}$ | |

9. Given the figure below, determine the value of $\sin \theta$.



McKeague/Turner Trigonometry 8e - Chapter 2 Form E

_____ 10. Indicate the two quadrants θ could terminate in if $\tan \theta = -\frac{17}{25}$.

- a. Quadrants III and IV
- b. Quadrants II and IV
- c. Quadrants I and III
- d. Quadrants I and IV
- e. Quadrants II and III

_____ 11. Evaluate $\sin 300^\circ$.

- a. $-\frac{\sqrt{3}}{2}$
- b. $-\frac{1}{2}$
- c. $\frac{1}{2}$
- d. $\frac{\sqrt{3}}{2}$
- e. $-\frac{\sqrt{2}}{2}$

12. The point $(8, 15)$ is on the terminal side of an angle in standard position. Determine the exact value of $\cot \theta$.

_____ 13. Find $\sin \theta$ if $\csc \theta = \frac{-37}{31}$.

- a. $\frac{6}{37}$
- b. $-\frac{6}{37}$
- c. $-\frac{31}{37}$
- d. $\frac{6}{31}$
- e. $\frac{31}{37}$

_____ 14. Find $\tan \theta$ if $\sec \theta = \frac{\sqrt{410}}{11}$ and $\csc \theta = \frac{\sqrt{410}}{17}$.

- a. $\frac{410}{187}$
- b. $\frac{187}{410}$
- c. $-\frac{11}{17}$
- d. $\frac{17}{11}$
- e. $\frac{11}{17}$

McKeague/Turner Trigonometry 8e - Chapter 2 Form E

- ____ 15. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(2 - 2\cos x)(2 + 2\cos x)$$

- a. $4 - \cos^2 x$
- b. $4 - 4\cos^2 x$
- c. $4\sin^2 x$
- d. $\frac{4}{\csc^2 x}$
- e. $\frac{4}{1 + \cot^2 x}$

- ____ 16. If $\sin \theta = \frac{-8}{\sqrt{113}}$ and θ terminates in QIII, find $\cos \theta$.

- a. $\frac{-7}{\sqrt{113}}$
- b. $\frac{-7}{8}$
- c. $\frac{7}{8}$
- d. $\frac{7}{\sqrt{113}}$
- e. $\frac{-\sqrt{113}}{49}$

McKeague/Turner Trigonometry 8e - Chapter 2 Form E

____ 17. Suppose $\csc \theta = 9$ and θ terminates in QII. Find the remaining trigonometric ratios of θ .

a. $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{-4\sqrt{5}}{9}$$

$$\tan \theta = -4\sqrt{5}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = \frac{-1}{4\sqrt{5}}$$

b. $\sin \theta = \frac{-4\sqrt{5}}{9}$

$$\cos \theta = \frac{1}{9}$$

$$\tan \theta = \frac{-1}{4\sqrt{5}}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = -4\sqrt{5}$$

c. $\sin \theta = \frac{-4\sqrt{5}}{9}$

$$\cos \theta = \frac{1}{9}$$

$$\tan \theta = -4\sqrt{5}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = \frac{-1}{4\sqrt{5}}$$

d. $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{4\sqrt{5}}{9}$$

$$\tan \theta = \frac{1}{4\sqrt{5}}$$

$$\sec \theta = \frac{9}{4\sqrt{5}}$$

$$\cot \theta = 4\sqrt{5}$$

e. $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{-4\sqrt{5}}{9}$$

$$\tan \theta = \frac{-1}{4\sqrt{5}}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = -4\sqrt{5}$$

____ 18. If $\csc \theta = -11$, find $\csc^3 \theta$.

a. -33

b. $\frac{-1}{33}$

c. $\frac{-1}{1,331}$

d. $-1,331$

e. $1,331$

McKeague/Turner Trigonometry 8e - Chapter 2 Form E

____ 19. Find the length of the shorter sides of a $45^\circ - 45^\circ - 90^\circ$ triangle if the length of the hypotenuse is 19.

a. $\frac{19\sqrt{3}}{2}$

d. $\frac{19}{2}$

b. $\frac{19\sqrt{3}}{3}$

e. $\frac{19\sqrt{2}}{4}$

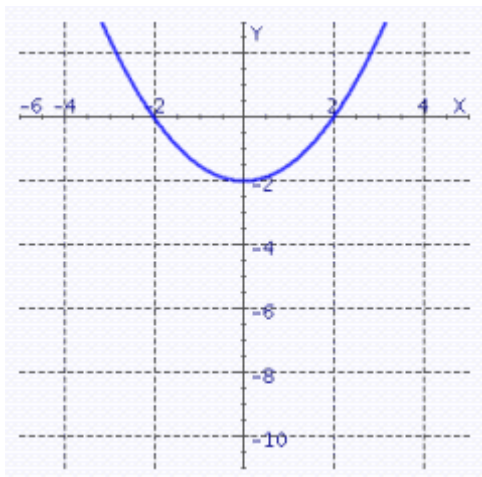
c. $\frac{19\sqrt{2}}{2}$

McKeague/Turner Trigonometry 8e - Chapter 2 Form E

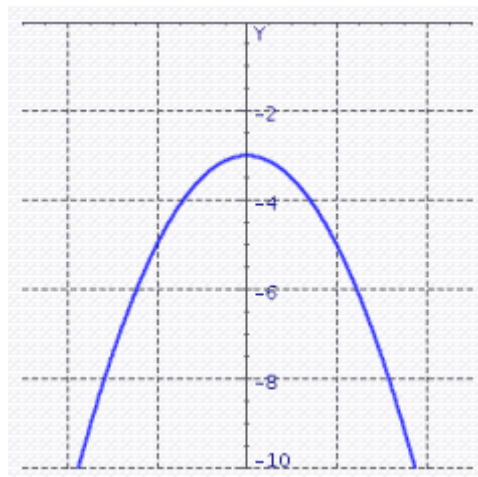
____ 20. Graph the following parabola.

$$f(x) = -\frac{1}{2}x^2 - 2$$

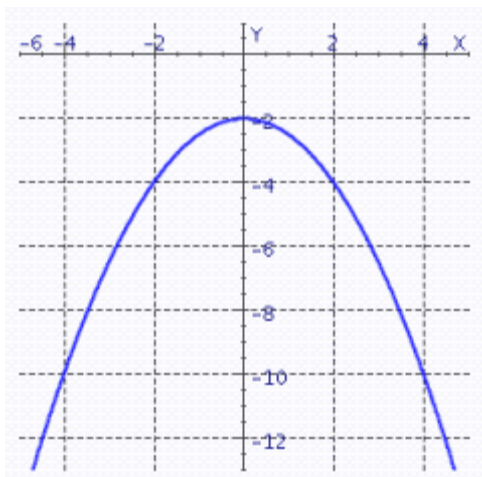
a.



d.

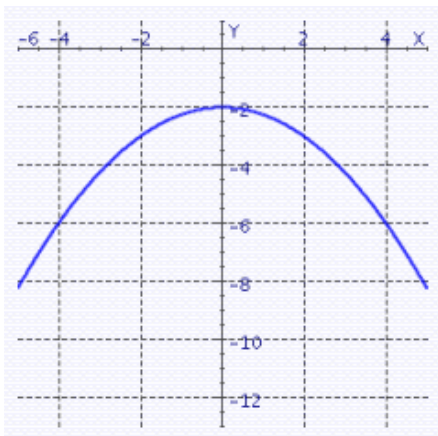


b.



e. None of the above.

c.



McKeague/Turner Trigonometry 8e - Chapter 2 Form E

21. Given $\sin 30^\circ = \frac{1}{2}$ and $\cos 30^\circ = \frac{\sqrt{3}}{2}$, determine the following:

$$\tan 30^\circ$$

- ____ 22. Find the distance between the two points $(9, 4)$ and $(49, 79)$.

- a. 170
- b. 85
- c. 82
- d. 255
- e. 167

- ____ 23. Simplify the expression $\sqrt{x^2 + 10}$ as much as possible after substituting $\sqrt{10} \tan \theta$ for x .

- a. $\sqrt{10} |\sec \theta|$
- b. $\sqrt{10} |\sin \theta|$
- c. $\sqrt{10} |\csc \theta|$
- d. $10 |\csc \theta|$
- e. $10 |\sec \theta|$

- ____ 24. Simplify the expression $\sqrt{30 - 6x^2}$ as much as possible after substituting $\sqrt{5} \sin \theta$ for x .

- a. $30 |\csc \theta|$
- b. $\sqrt{30} |\csc \theta|$
- c. $\sqrt{30} |\tan \theta|$
- d. $30 |\cos \theta|$
- e. $\sqrt{30} |\cos \theta|$

- ____ 25. Which of the following is equivalent to the given expression?

$$\frac{\sin^2 x}{1 - \cos x}$$

- a. $\tan x + \sin x$
- b. $1 + \cos x$
- c. $\csc x + \cot x$
- d. $\tan x \cot x - \cos x$
- e. $\cot x \sin x + \tan x$

McKeague/Turner Trigonometry 8e - Chapter 2 Form E

Answer Section

1. D
2. B
3. E
4. B
5. A
6. $267^\circ, -93^\circ$
7. E
8. A
9. $\sin \theta = -\frac{4}{5}$
10. B
11. A
12. $\cot \theta = \frac{8}{15}$
13. C
14. D
15. A
16. A
17. E
18. D
19. C
20. B
21. $\tan 30^\circ = \frac{\sqrt{3}}{3}$
22. B
23. A
24. E
25. B

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Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\cot \beta \sec \beta$$

- a. $\frac{1}{\sin \beta}$
- b. $\frac{\sec \beta}{\tan \beta}$
- c. $\frac{1}{\cos \beta \tan \beta}$
- d. $\sec \beta$
- e. $\csc \beta$

- _____ 2. Find the complement and supplement of the angle 55° .

- | | |
|---|---|
| a. Complement: 45°
Supplement: 145° | d. Complement: 35°
Supplement: 125° |
| b. Complement: 125°
Supplement: 35° | e. Complement: 125°
Supplement: 305° |
| c. Complement: 145°
Supplement: 235° | |

- _____ 3. Determine which of the following points is located in quadrant 4.

- | | |
|---------------|--------------|
| a. $(-5, -6)$ | d. $(-6, 5)$ |
| b. $(6, -5)$ | e. $(-5, 6)$ |
| c. $(5, 6)$ | |

- _____ 4. Which of the following points lies on the unit circle?

- a. $\left(\frac{-5}{7}, \frac{2\sqrt{6}}{7}\right)$
- b. $\left(\frac{-5}{9}, \frac{-2\sqrt{6}}{9}\right)$
- c. $\left(\frac{3}{7}, \frac{2\sqrt{6}}{7}\right)$
- d. $\left(\frac{-3}{11}, \frac{2\sqrt{6}}{11}\right)$
- e. None of the above.

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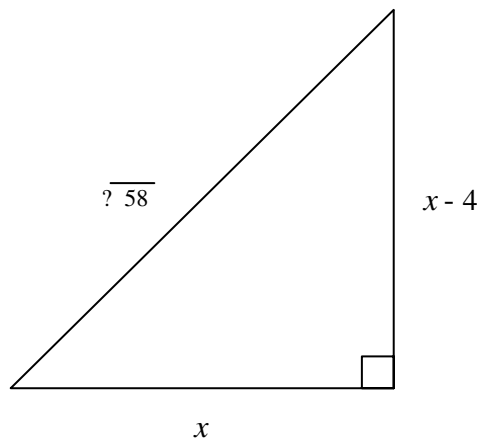
5. Determine two coterminal angles (one positive and one negative) for $\theta = -526^\circ$.

____ 6. Let triangle ABC be a right triangle with $C = 90^\circ$. If $c = 19$ and $a = 6$, find b .

- a. $\sqrt{13}$
- b. $\sqrt{397}$
- c. 13

- d. $5\sqrt{13}$
- e. None of the above.

____ 7. Solve for x in the following right triangle:



- a. 8
- b. 9
- c. 6

- d. 7
- e. 10

____ 8. Find the lengths of the shortest two sides of a $30^\circ - 60^\circ - 90^\circ$ triangle, if the length of the longest side is 16.

- a. $4, \frac{8}{\sqrt{3}}$
- b. $4, 4\sqrt{3}$
- c. $8, \frac{8}{\sqrt{3}}$

- d. $4, \frac{4}{\sqrt{3}}$
- e. $8, 8\sqrt{3}$

McKeague/Turner Trigonometry Chapter 2 Form F

_____ 9. Indicate the two quadrants θ could terminate in if $\tan \theta = -\frac{13}{23}$.

- a. Quadrants I and III
- b. Quadrants III and IV
- c. Quadrants II and III
- d. Quadrants I and IV
- e. Quadrants II and IV

_____ 10. Evaluate $\sin 240^\circ$.

- a. $-\frac{1}{2}$
- b. $\frac{1}{2}$
- c. $\frac{\sqrt{3}}{2}$
- d. $-\frac{\sqrt{2}}{2}$
- e. $-\frac{\sqrt{3}}{2}$

11. The point $(7, 24)$ is on the terminal side of an angle in standard position. Determine the exact value of $\csc \theta$.

_____ 12. Find $\sin \theta$ if $\csc \theta = \frac{-17}{13}$.

- a. $-\frac{13}{17}$
- b. $\frac{4}{13}$
- c. $\frac{4}{17}$
- d. $\frac{13}{17}$
- e. $-\frac{4}{17}$

_____ 13. Find $\tan \theta$ if $\sec \theta = \frac{\sqrt{410}}{11}$ and $\csc \theta = \frac{\sqrt{410}}{17}$.

- a. $\frac{11}{17}$
- b. $\frac{17}{11}$
- c. $-\frac{11}{17}$
- d. $\frac{187}{410}$
- e. $\frac{410}{187}$

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- ____ 14. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(\tan x + 1)^2$$

- a. $\tan^2 x + 1$
- b. $\sec^2 x + 2 \tan x$
- c. $\frac{1 + 2 \sin x \cos x}{\cos^2 x}$
- d. $\tan^2 x + 2 \tan x + 1$
- e. $\sec^2 x(1 + 2 \sin x \cos x)$

- ____ 15. If $\sin \theta = \frac{-6}{\sqrt{157}}$ and θ terminates in QIII, find $\cos \theta$.

- | | |
|------------------------------|--------------------|
| a. $\frac{11}{\sqrt{157}}$ | d. $\frac{-6}{11}$ |
| b. $\frac{-\sqrt{157}}{121}$ | e. $\frac{6}{11}$ |
| c. $\frac{-11}{\sqrt{157}}$ | |

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____ 16. Suppose $\csc \theta = 7$ and θ terminates in QII. Find the remaining trigonometric ratios of θ .

a. $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

b. $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

c. $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{4\sqrt{3}}{7}$$

$$\tan \theta = \frac{1}{4\sqrt{3}}$$

$$\sec \theta = \frac{7}{4\sqrt{3}}$$

$$\cot \theta = 4\sqrt{3}$$

d. $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

e. $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

17. Given $\sin 30^\circ = \frac{1}{2}$ and $\cos 30^\circ = \frac{\sqrt{3}}{2}$, determine the following:

$$\sec 30^\circ$$

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_____ 18. If $\csc \theta = -11$, find $\csc^3 \theta$.

a. -33

d. $\frac{-1}{33}$

b. $\frac{-1}{1,331}$

e. $1,331$

c. $-1,331$

_____ 19. Find the length of the shorter sides of a $45^\circ - 45^\circ - 90^\circ$ triangle if the length of the hypotenuse is 17.

a. $\frac{17}{2}$

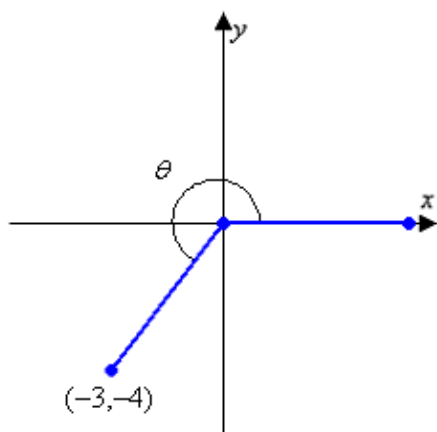
d. $\frac{17\sqrt{3}}{2}$

b. $\frac{17\sqrt{3}}{3}$

e. $\frac{17\sqrt{2}}{2}$

c. $\frac{17\sqrt{2}}{4}$

20. Given the figure below, determine the value of $\sin \theta$.

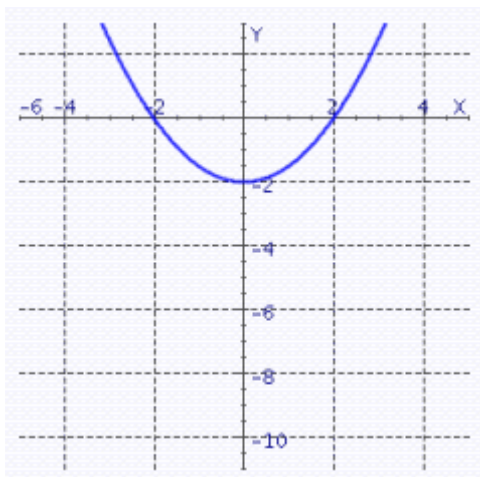


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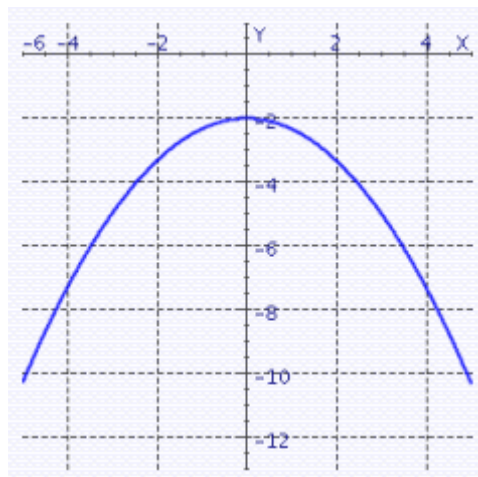
____ 21. Graph the following parabola.

$$f(x) = -\frac{1}{2}x^2 - 2$$

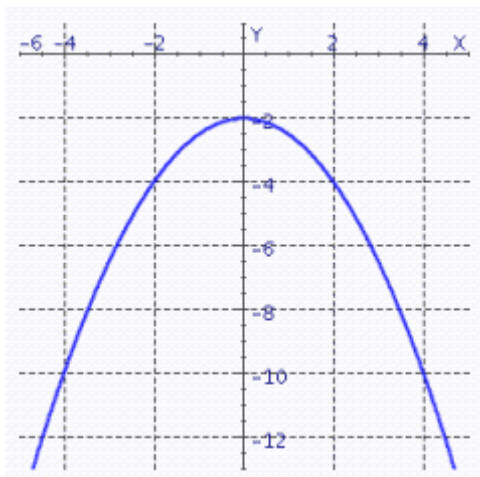
a.



d.

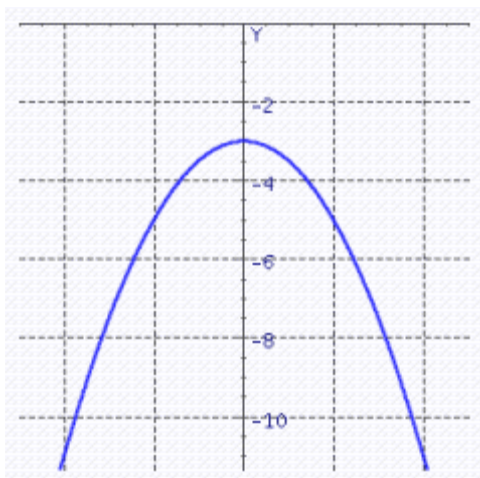


b.



e. None of the above.

c.



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____ 22. Find the distance between the two points (4, 2) and (10, 10).

- a. 20
- b. 10
- c. 7
- d. 30
- e. 17

____ 23. Which of the following is equivalent to the given expression?

$$\frac{\cos^2 x}{1 + \sin x}$$

- a. $\tan x + \cos x$
- b. $1 - \sin x$
- c. $\csc x + \cot x$
- d. $\tan x \cot x - \sin x$
- e. $\cot x \cos x + \tan x$

____ 24. Simplify the expression $\sqrt{x^2 + 13}$ as much as possible after substituting $\sqrt{13} \tan \theta$ for x .

- | | |
|------------------------------|-----------------------|
| a. $\sqrt{13} \csc \theta $ | d. $13 \csc \theta $ |
| b. $\sqrt{13} \sin \theta $ | e. $13 \sec \theta $ |
| c. $\sqrt{13} \sec \theta $ | |

____ 25. Simplify the expression $\sqrt{30 - 6x^2}$ as much as possible after substituting $\sqrt{5} \sin \theta$ for x .

- | | |
|------------------------------|------------------------------|
| a. $\sqrt{30} \tan \theta $ | d. $\sqrt{30} \csc \theta $ |
| b. $30 \csc \theta $ | e. $30 \cos \theta $ |
| c. $\sqrt{30} \cos \theta $ | |

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McKeague/Turner Trigonometry Chapter 2 Form F Answer Section

1. D
2. D
3. B
4. A
5. $194^\circ, -166^\circ$
6. D
7. D
8. E
9. E
10. E
11. $\csc \theta = \frac{25}{24}$
12. A
13. B
14. A
15. C
16. D
17. $\sec 30^\circ = \frac{2\sqrt{3}}{3}$
18. C
19. E
20. $\sin \theta = -\frac{4}{5}$
21. B
22. B
23. B
24. C
25. C